

Abstract

The invention concerns a membrane electrode unit (MEU) for electrochemical
5 equipment, especially for membrane fuel cells. The membrane electrode unit has a
“semi-coextensive” design and contains an ionically conductive membrane, two catalyst
layers, and gas distributor substrates of different sizes on the front and back sides. The
first gas distributor substrate has smaller surface dimensions than the ionically conductive
membrane, while the second gas distributor substrate has the same area as the ionically
10 conductive membrane. The membrane electrode unit has, because of its special design, a
stable structure that can be handled well, and which exhibits advantages for sealing the
reactive gases off from each other and in its electrical properties. In particular, the
hydrogen penetration current is distinctly reduced. The membrane electrode unit is used
in PEM fuel cells, direct methanol fuel cells, electrolyzers, and other electrochemical
15 equipment.